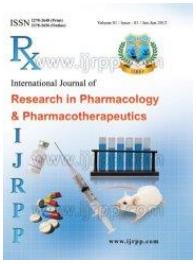
International Journal of Research in Pharmacology & Pharmacotherapeutics



ISSN Print: 2278-2648 ***IJRPP |Vol.7 | Issue 2 | Apr - Jun - 2018***
ISSN Online: 2278-2656 ***Journal Home page: www.ijrpp.com***

Research article ***Open Access***

Analysis of antibiotics use in hospitalised patients of a tertiary care hospital in a semi urban area

Dr.R.Lenin M.D[1], Dr.G.Rajaram M.D[2*]

[1]*Assistant Professor of Pharmacology, Govt Villupuram Medical College, Villupuram- 605601*
[2]*Professor of Pharmacology, Govt Villupuram Medical College, Villupuram- 605601*
***Corresponding author: Dr.G.Rajaram M.D**
Email: rajaram74.rg@gmail.com

ABSTRACT

Background

Irrational prescribing of antibiotics leads to bacterial resistance, increased cost of therapy and serious adverse drug reactions. Our study aims at analyzing the use of antibiotics in hospitalized patients with infections in a tertiary care hospital of a semi urban area.

Methods

A total of 100 inpatient case records treated with antibiotics were chosen. The demographic data, disease data and the utilization of different AMAs were analyzed.

Results

A total of 310 prescriptions of antibiotics were noted in the study in 100 patients (i.e. – an average of 3.1antibiotics/patient). Metronidazole (21%), Cefotaxime (13%) and Gentamicin (13%) were the most common antibiotics used. Most common infections were involving genitourinary tract and respiratory system. Culture and sensitivity were done in 18 patients. Pipericillin +Tazobactum was the most common FDC prescribed in our study. 91% of patients were completely recovered from illness.

Conclusion

The use of combination of antibiotics should be restricted and narrowed down to specific agents. The antibiotic prescribing guidelines should be strictly followed in patient care. With appropriate and effective use of antibiotics, patient care may be improved and antibiotic resistance may be avoided.

Keywords: Antimicrobial agents, Prescribing pattern, Semi urban tertiary care hospital

INTRODUCTION

Antibiotics are one of the most common drugs prescribed in hospitals today. It has been estimated that upto a third of all patients receive at least one antibiotic during hospitalization [1]. Upto 40% of a hospital's drug expenditure may be devoted to the purchase of antibiotics [2]. Rational and adequate uses of antimicrobial agents play an essential role in

insuring patient safety because antibiotic misuse fosters bacterial resistance and increasing the cost of health care system.

There have been numerous studies on patterns of antimicrobials use in hospitals. Many of these studies however conducted in developed countries. Data related to antimicrobials use from developing countries are scarce [3]. Limited availability of newer agents emphasizes the urgent need for vigilant surveillance, stringent infection control practices, as well as rational antibiotic prescription [4]. Drug utilization study is a component of medical audit that does monitoring and evaluation of the drug prescribing patterns and suggests necessary modification in prescribing practices to achieve rational therapeutic practice as well as cost of effective health care [5]. The present study aims at analyzing the antibiotic use in hospitalized patients of a tertiary care hospital in a semi-Urban area. i.e. Government Villupuram medical college hospital, Tamilnadu state, India.

MATERIALS & METHODS

Inpatient case records of 100 patients treated for various infections with antibiotics were selected. The demographic and treatment data were collected in the following format.

1. Age and sex of patients
2. Diagnosis of patients
3. Number of antimicrobials prescribed
4. Classes of antimicrobials prescribed
5. Dosage forms, dose and routes of Anti Microbial Agents administered to patients

The demographic data, disease data and utilization of different AMAs were analyzed. The AMAs were classified according to anatomical therapeutic (ATC) coding system given by WHO.

RESULTS

A total number of 100 case sheets of patients admitted with infectious disease were collected. The study duration was from January 2018 to March 2018. A total number of 310 AMAs were prescribed in 100 patients. Average number of antibiotics per patient was 3.1. The route of administration was mostly intravenous (86%). Maximum number of drugs prescribed in generic version was 181. Around 43 prescriptions included fixed drug combinations. (Table.1.).

Table 1: Prescribing Indicators.

1	Total number of patients	100
2	Total number of antibiotics prescribed	310
3	Average number of antibiotics per patients	3.1
4	Route of drug administration(intravenous)	86%
5	Maximum number of drugs prescribed by generic	181
6	Number of prescription containing FDCs	43

Age wise distribution of patients is given in Table 2.Of the 100 patients 67 patients are males and 33 patients are females.

Table 2: Age and Sex Distribution of Patients

S.NO	Age in years	Number of patients
1	< 18	24
2	18-30	36
3	31-45	17
4	46-60	11
5	>60	12
6	TOTAL	100

Table 3: Percentages of Most Commonly Prescribed Antibiotics.

S	ANTIBIOTICS	PERCENTAGE
1	Cefotaxime	13%
2	Ceftriaxone	6%
3	Piperacillin+Tazo	5%
4	Ciprofloxacin	12%
5	Doxycycline	2%
6	Metronidazole	21%
7	Gentamicin	13%
8	Amikacin	4%
9	Ampicillin	5%

Metronidazole is the most commonly used antibiotic followed by Cefotaxime

Table 4: Percentages of most commonly prescribed antibiotics.(ATC)

S.NO	ANTIBIOTICS	ATC	PERCENTAGE
1	3rd Gen Cephalosporins	JO1DD	20%
2	Imidazole derivative	J01XD	21%
3	fluroquinolones	J01MA	5%
4	Beta lactams	J01GB	5%
5	Aminoglycosides	J01GB	17%

Table 5: Diagnosis- Patients Prescribed Antibiotics

S.NO	DIAGNOSIS	PERCENTAGES OF PRESCRIBED AMAs
1	Respiratory disorders	25%
2	Genitourinary infections	49%
3	Skin	11%
4	Gastrointestinal	11%
5	Cardiovascular	1%
6	Neurological	3%

The maximum numbers of antibiotics were prescribed for genitourinary infections followed by respiratory infections.

The factors that usually contributed to prescribing practices were,

1. Culture and sensitivity
2. Availability and cost of antibiotics
3. Work load of prescribers
4. Antibiogram pattern of the hospital.

A total of 18 culture reports were available. The organisms grown are given in table.6.

Table 6: Culture reports

Pseudomonas aeuroginosa	4
Proteus	3
Staphylococcus epidermid	1
Staphylococcus aureus	2
E coli	2
Klebsiella pneumoniae	5
Enterococci sp	1

Considering the outcome of patients, 91 patients were recovered and 9 patients were discharged against medical advice.

DISCUSSION

Interestingly in our study most of the patients were in the age group of less than 30. Pediatric patients were also high. The genitourinary tract infections are most prevalent in this part of country. Labour related infections and neonatal infections were also high. The low socioeconomic status and poor education may be the cause for this pattern of infections in this population. The same may be true why Metronidazole and 3rd generation Cephalosporins are most commonly used antibiotics in treating genitourinary and neonatal infections. The use of restricted antibiotics like Piperacillin and Vancomycin are also seen in this study. However the utilization of culture and sensitivity for selection of antibiotics are found only in 18 cases out of 100 patients. This denotes the physicians prefer empirical antibiotics in treating patients which may increase the cost of therapy as well as risk of antibiotic resistance. However in our study 91 out of 100 patients were recovered fully. Hospital acquired infections were also found in our study as evidenced from culture reports which necessitates the need for further strict adherence to antibiotic policies, periodic updating of antibiogram and educating the health care workers on reducing hospital acquired infections.

Indiscriminate and inappropriate prescribing of antimicrobial is a widespread problem imposing a substantial economic burden on health care systems. A study of prescribing pattern of antimicrobial is an effective way of reflecting appropriateness of antimicrobial use [6]. A prescription provides an insight into a prescriber's attitude to the disease being treated and the nature of health care delivery system in a community and /or a country. Both overprescribing and under prescribing of antimicrobials are harmful practices; Overprescribing is associated with increased side-effects, excessive cost and ultimately emergence of resistant organisms, where as under prescribing leads to ineffective treatment [7, 8, 9]

The selection of antimicrobials to prescribe for the patients may be the personal choice of a physician in a hospital. The personal choice, limited experience and other influences on physician may lead to inappropriate prescribing of antimicrobial. Several studies in hospitals both in developed and developing countries have shown that inappropriate prescribing of antimicrobial is widespread [10, 11]. Hospitals physicians preferred to use combination of antimicrobials. The majority patients in this study received two or more antibiotics in combination for their treatment. Population based [12] and tertiary level hospital based [13] studies of antimicrobial utilization patterns showed that 37.5% of patients respectively received two or more antibiotics in combination. In our study, the use of combination of antibiotics may be because the physicians want to extend the spectrum and also based on the latest antibiotics guidelines.

CONCLUSION

Antibiotics are widely prescribed and form a significant proportion of the total drugs consumed in inpatients care of hospitals. The high utilization rates of antibiotics in hospitals are a matter of great concern and need to be evaluated.

The teaching of antibiotics use both at undergraduate and continuing medical education levels in the country will have to be reviewed and improved upon. The use of combination of antibiotics should be restricted and narrowed down to specific drugs. Medically qualified microbiogists and infectious disease physicians should be available for routine consultation. Regular antibiotic audits should also be conducted at all hospitals. The antibiotic prescribing guidelines may be printed in a pocked-sized booklet and be given to every doctor in the hospital. With appropriate and effective use of antibiotics patients care may be improved and antibiotic resistance may be avoided.

Funding: No Funding sources
Conflict of Interest: None declared
Ethical Approval: Institutional Pharmacovigilance Committee

REFERENCES

[1]. COOKE D, SaltER aj, Phillips J. antimicrobial MISUSE, antibiotic policies and information resources. J antimicrobials chemother 6, 1980, 435-43.
[2]. Hirschman SZ, Meyers BR, Bradbury K, MehlB. Use of antimicrobial agents in a university teaching hospital. Arch Intern med 148, 1988, 2001-7.
[3]. Lim VKE, Cheong YM, sulciman. Pattern OF antibiotic USAGE IN hospitals in malaysia. singapore medical journal 34, 1993, 525-528.
[4]. Esposito S,Leone S. Antimicrobial treatment OF ICU infections including the role of the infectious disease specialist. Int J Antimicrob Agents. 29, 2007, 494-500. prescribing
[5]. Srishyla MA, Melendy S, Jahns B, et al. An exploratory analysis of medical utilization in a medical intensive care unit. Crit care med, 21(a), 1993, 319-23.
[6]. McCafferty JA, HANG sdr. An audit of restricted antibiotic use in a general hospital. New Zealand medical journal 101, 1988, 210-211.
[7]. Straand J. How often do general practitioners prescribe antibiotics for ottitis media and the most common respiratory tract infections? Norwegian journal of epidemiology 11, 2001, 67-72.
[8]. Erah PO, Olumide GO, OKhamafe AO. Prescribing practitices in two health care facilities in warri, southern higeria: A comparative study. Tropical journal of pharmaceutical research 2, 2003, 175-182.
[9]. Shanker PR, Dubey AK Rana MS. Drry utilization with special reference to antimicrobials in a sub health post in western Nepal. Journal of Nepal health research council 3, 2005, 65-69.
[10]. Barman A, Ahmad J Ahmed AV. Treatment pattern of watery diarrhea at primary health care level of Bangladesh. Teachers association journal 7(2), 1994, 80-82.
[11]. SULTAN-Ul-Alam M, Barna PC, Islam AFMS. A survey of the pattern of drug utilization for watery diarrhea at primary division. Hygeia 7(1), 1993, 15-18.
[12]. Islam MN, Astudy on prescribing pattern of antibiotics by registered medical practitioners in private chamber in a selected district, Bangladesh department of public health and hospital administration, NIPSOM, Bangladesh, 59, 1994.
[13]. Ballin JC, Dykes MHM, Jeromc JB, Kojman ME. In comment. Reasons for increase in antibiotic usage. Journal of American medical association 227, 1974, 1029-1030.